

## ELECTRONICS

# Heat Stable Transistor

► A MUCH sought after silicon transistor at last has been made in the laboratory. It should solve a pressing heat problem now plaguing designers of airborne military electronic gear.

Only a few ten-thousandths of an inch thick, the little wafer can do many jobs of conventional vacuum tubes in radio and television sets, hearing aids and electronic "brains."

Although the transistor in many ways is an answer to the dreams of electronic engineers, the silicon model will not go into commercial production until improvements can be made in the refinement of silicon, David B. Smith, Philco's vice-president of research, told the Washington chapter of the Institute of Radio Engineers.

Previous transistors largely have been made of germanium. This rare metal comes with a price tag of about \$500 a pound.

Found in common sand, silicon is one of the earth's most plentiful materials. It not only costs less than germanium, but also withstands rugged temperatures that "knock out" germanium's transistor qualities.

Using two jets of an indium salt, Philco engineers etched a thin wafer-like slab of silicon to microscopic thickness. At the desired point, the electric current passing through the silicon and liquid jets was reversed. This instantly electroplated the silicon with indium. Then electrodes were attached to the silicon wafer. (See SNL, Dec. 12, 1953, p. 373.)

The resulting silicon transistor kept its

desirable properties at high temperatures. It also worked well in the high-frequency radio band.

Transistors are becoming increasingly important in the field of electronics. This is particularly true of airborne gear such as radar and radio. Transistors, because of their tiny dimensions, permit the gear to be made lighter, and to be squeezed into smaller spaces on today's more complicated jet bombers and supersonic fighters.

However, transistors cannot do all the jobs of vacuum tubes. Consequently they often must be mixed with conventional tubes.

It is not practical to do this in airborne equipment today because heat given off by the tubes cannot escape easily. Highly sensitive to heat, germanium transistors are unreliable under such conditions. Engineers, however, believe the silicon transistor is the answer to this problem.

Science News Letter, January 23, 1954

## Science Leaps Barriers of Language With Journal, *Scientia International* Monthly Edition of *Science News Letter* in Interlingua

*Scientia International* carries the news of science to the non-English speaking areas of the world. Appearing monthly, it can be read by anyone anywhere. Terse, packed with information, it contains careful selections from the English-language weekly edition.

Subscribe to *Scientia International* for friends abroad. A gift card will be sent in your name.

Subscription to *Scientia International* is only \$2 a year. For airmail transmission, add the actual cost of 12 half-ounce airmailings: \$1.20 airmail postage for Latin America, \$1.80 for Europe and \$3.00 for the Near and Far East

and Africa, etc.

Help the free international flow of scientific information by subscribing to *Scientia International* for friends and acquaintances in non-English speaking countries abroad. In other countries there is no journal like *Science News Letter*. But now you can supply them with one in a language which is not their native tongue but which they can read with utter ease.

Take out a subscription to *Scientia International* for yourself and keep up with the progress of the first periodical appearing in Interlingua.

Send as gift in my name **SCIENTIA INTERNATIONAL** to the following by  Regular Mail  Air Mail

Name.....

Name.....

Send gift card in name of:

Address.....

Address.....

Donor's Name.....

City.....

City.....

Address.....

Country.....

Country.....

City, Zone, State.....

Enter my subscription also.  Bill me.

\$ ..... enclosed. (\$2 for each subscription, plus airmail postage if ordered.)

Mail to **SCIENCE NEWS LETTER, 1719 N Street, N.W., Washington 6, D. C.**

1-23-4